

REMARKS

In response to the Office Action dated September 26, 2001, Applicants respectfully request reconsideration and withdrawal of the rejections of the claims.

Claims 1, 7, 9 and 13 were rejected under 35 U.S.C. § 102, as being anticipated by the newly-cited *Braun* patent, and claims 2-4, 8 and 10-14 were rejected under 35 U.S.C. § 103, as being unpatentable over the *Braun* patent in view of the previously-cited *Medina Puerta et al.* patent. In addition, claim 5 was rejected under 35 U.S.C. § 103 as being unpatentable over the *McHenry* patent, and claim 6 was rejected as being unpatentable over the *McHenry* patent in view of the *Medina Puerta* patent. To reduce the issues under consideration, claims 5-8 have been canceled. In addition, the subject matter of claims 4 and 12 has been incorporated into claims 1 and 9, respectively, to recite that the second surface of the lens element is aspherical, and claim 13 has been amended in a commensurate manner. Claims 3, 4, 11 and 12 have been canceled as being unnecessary in view of these changes.

The rejection of claims 2-4 and 10-12 acknowledges that the *Braun* patent does not disclose aspherical surfaces on its lens element. The rejection alleges, however, that it would be obvious to place aspherical surfaces on both sides of the lens, in view of the teachings of the *Medina Puerta et al.* patent. It is respectfully submitted that such a modification would not, in fact, be obvious to one of ordinary skill in the art, since it is directly contrary to the explicit teachings of the *Braun* patent.

More particularly, throughout its disclosure the *Braun* patent teaches that the second surface 22, 22a, 64, 107 in its various embodiments has a spherical shape. See, for example, column 2, lines 42 and 44; column 4, lines 20-21 and 30-31; and column 5, lines 11-12, 13, 19-20, 26 and 61-62. At each of these locations, the patent explicitly discloses that the shape of the second surface is spherical. More importantly, however, at column 6, lines 35-38, the patent states "The optical structure is not limited to any particular configuration in accordance with the invention *but requires a spherical shaped surface and at least one additional surface.*" (emphasis added). This explicit statement that the optical element of the *Braun* patent "requires" a spherical surface would not lead a person of ordinary skill in the art to employ a lens element with an aspherical shape on its second surface, since it would be directly contrary to the teachings of the patent.

Accordingly, it is respectfully submitted that the subject matter of claims 4 and 12, which has now been incorporated into claims 1, 9 and 13, is not obvious in light of the *Braun* patent. Reconsideration and withdrawal of the rejection of these claims is therefore respectfully requested.

New claims 27 and 28 are directed to another distinguishing feature of the present invention. As illustrated in the various embodiments shown in the figures, in the lens element of the present invention, a light ray enters the peripheral portion of the first surface, is reflected once at the peripheral portion of the second surface, and is reflected again at the central portion of the first surface. Upon being reflected this second time, the light rays are imaged at a point along the optical axis of the lens element.

In contrast, the *Braun* patent discloses that the incoming light beam is reflected multiple times on each of the first and second surfaces before it reaches the focal point 24. It will be appreciated that each reflection results in a loss of some of the received light. In fact, this concept is explicitly acknowledged in the *Braun* patent, at column 2, lines 46-52. Since the *Braun* patent is directed to boresight and range testers, these losses are not consequential. However, in the context of the present invention, where the lens element is used for imaging purposes, such losses can be highly disadvantageous. By limiting the number of reflections within the lens element, the losses can be reduced, resulting in a higher quality image.

It is respectfully submitted that the *Braun* patent does not disclose, nor otherwise suggest, the subject matter of claims 27 and 28, since it is not concerned with a lens element that is used for imaging purposes.

Claims 21-24 were objected to, on the grounds that they depend upon a higher-numbered claim, i.e., claim 25. The objection states that "claims should depend upon earlier numbered claims." Applicants are unaware of any basis for such an objection. In fact, it appears to be directly contrary to the requirements of 37 C.F.R. § 1.126.

In the present case, claim 25 was substituted for claim 20, from which claims 21-24 originally depended. According to 37 C.F.R. § 1.126, when a new claim is presented, it "must" be numbered by the Applicant consecutively beginning with the number next following the highest numbered claim previously presented. Thus, Applicants were precluded from numbering the new independent claim as a lower numbered claim.

According to 37 C.F.R. § 1.126, when an application is ready for allowance, the Examiner is supposed to renumber the claims consecutively. As further set forth in MPEP § 1302.01, the Examiner should give particular attention to claims that are dependent on previous claims, to be sure that the numbering is consistent.


In the present case, the claims will have to be renumbered upon allowance, due to the cancellation of claims 3-8, 11, 12 and 15-20. Since the claims will have to be renumbered at that time, it is not seen where any benefit is to be gained by changing the numbering of claims 21-24 at this time, only to have them changed again.

Accordingly, reconsideration and withdrawal of the objection is respectfully requested. If the objection is maintained, the Examiner is respectfully requested to provide a basis for the request to change the dependency of the claims.

Reconsideration and withdrawal of all rejections and objections, and allowance of all pending claims is respectfully requested.

Respectfully submitted,

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Attachment to Amendment dated March 26, 2002

Marked-up Claims 1, 9, 13 and 14

1. (Twice Amended) An optical system comprising,

a lens element for focusing incident luminous flux at a predetermined position, said lens element having, from a long conjugate distance side, a first surface convex to the long conjugate distance side and a second aspherical surface convex to a side opposite to the long conjugate distance side,

wherein the luminous flux passing through a peripheral part of said first surface is reflected at a peripheral part of said second surface, is again reflected at a central part of said first surface and imaged on an optical axis of the lens element.

9. (Twice Amended) An optical system comprising,

a lens element for focusing incident luminous flux at a predetermined position, said lens element having, from a long conjugate distance side, a first surface concave to the long conjugate distance side and a second aspherical surface strongly convex to a side opposite to the long conjugate distance side,

wherein the luminous flux passing through a peripheral part of said first surface is reflected at a peripheral part of said second surface, is again reflected at a central part of said first surface and imaged on an optical axis of the lens element.

Attachment to Amendment dated March 26, 2002

Marked-up Claims 1, 9, 13 and 14

13. (Twice Amended) An optical system comprising a lens element having a first convex surface on the long conjugate distance side thereof with a reflective coating on a central portion thereof and a light admitting area on said convex surface at the periphery of said reflective coating, and a second aspherical convex surface on the opposite side thereof with a reflective coating on a peripheral portion thereof and a light transmissive region at the central portion thereof.

14. (Twice Amended) The optical system of claim 13 wherein [at least one] both of said first and second surfaces [has] have an aspherical shape.